

REMARKS

Claims 1-26 remain in this application. No claims have been amended, canceled or added. Applicants respectfully request reconsideration of the rejections and further examination of the application in view of the following.

Claims 1-6, 8, 9, 11-15, 17 and 18 stand rejected under 35 U.S.C. § 102(e) as being anticipated by *Schulter et al.* (U.S. Patent Application Publication No. 2002/0156612). Applicants respectfully traverse this rejection.

As a preliminary matter, it is unclear to Applicants why certain independent claims, such as claim 1, are rejected on grounds of anticipation by *Schulter et al.*, yet other independent claims, such as claims 19 and 23, are rejected only on obviousness grounds based upon the combination of *Schulter et al.* and *Rogers et al.* (U.S. Patent Application Publication No. 2003/0048782). With regard to these claims, the Examiner states that “Schulter does not disclose transmitting redundant packets” and thus implies that *Rogers et al.* is included in combination with *Schulter et al.* in this rejection because it discloses transmitting redundant packets. Applicants respectfully point out that all independent claims are believed to encompass transmitting redundant packets (or frames), which is an important feature of the invention. For example, claim 1 recites that the virtual device driver maps the communication frame to be transmitted “to both said first and second device drivers.” Accordingly, both the first and second device drivers do to the frame what device drivers do—transmit it. Claim 1, like the other independent claims, clearly conveys that two instances of the same frame are transmitted. In view of this, it is believed that independent claim 1 and the claims that depend therefrom should have been treated in the same manner as independent claims 10, 19 and 23 and the claims that depend therefrom.

The invention relates generally to the communication of data frames from a first control element (i.e., a network processing device that operates in accordance with a network protocol stack) to a second control element. In the invention as it is recited in claims 1-9, the virtual device driver causes a first instance of the frame from the internetwork layer of the protocol stack to be transmitted via the first device driver via a first switching plane and causes a second instance of the same frame to be transmitted via the second device driver via a second switching

plane. Similarly, in the invention as it is recited in claims 10-18, each of the first and second device drivers receives a respective first and second instance of a frame via the respective first and second switching planes and causes the virtual device driver to pass one of the first and second instances of the frame on to the internetwork layer. The invention as it is recited in claims 19-26 is similar but further explicitly retains one of the first and second instances of the frames, thereby taking advantage of the redundancy.

As the Examiner acknowledges, Schulter et al. does not appear to disclose transmitting or receiving redundant frame instances via the pair of drivers. Rather, with reference to Figs. 3-4 and paragraph 0131, *Schulter et al.* appears to use each pair of drivers for load balancing purposes rather than for transmitting redundant frames. With reference to Figs. 3-4 and paragraphs 0045-0047, *Schulter et al.*'s "virtual Ethernet driver 310" appears to be used for sending and receiving Internet Protocol datagrams in the manner of an actual driver but does not relate to any redundant datagrams/frames. Nowhere does *Schulter et al.* disclose or suggest transmitting or receiving two instances of the same frame via two drivers and a common "virtual driver."

For at least the reasons discussed above, Applicants believe the claims are not anticipated by *Schulter et al.* and respectfully request reconsideration and withdrawal of this rejection.

Claims 7, 16, 19-21 and 23-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schulter et al.* in view of *Rogers et al.* Applicants respectfully traverse this rejection.

Rogers et al. discloses transmitting "duplicate packets" along several paths through a fabric of network nodes, where the first such packet received at a node where the paths merge is forwarded and duplicate copies received later via other such paths are discarded. (See, e.g., Abstract.) However, Applicants respectfully submit that it does not disclose a node transmitting (or receiving) redundant packets via two switching planes, each serviced by its own device driver, where a virtual driver is mapped to each of the two device drivers. The virtual driver of Applicants' invention is important because, from the perspective of the device ("control element"), it has only a single device driver, as in a conventional device. That is, the upper layers of the protocol stack "see" only the virtual device driver as the device driver. Conversely,

the virtual device driver is transparent to the first and second device drivers; they “see” only the upper layers of the protocol stack. Neither *Schulter et al.* nor *Rogers et al.* discloses or suggests such a scheme with redundant frames, two actual device drivers, and a virtual device driver. In particular, it is not apparent to Applicants that *Schulter et al.*’s “virtual Ethernet driver 310” operates in this manner in relation to the actual drivers, as *Schulter et al.* provides few details on its operation in relation to the actual drivers and features that exist in higher levels of the protocol stack. It cannot be inferred from the term “virtual driver” alone that it operates in this manner.

Rogers et al. discloses little more that is relevant to the claimed invention than the knowledge that it can be beneficial to transmit a number of redundant packets via separate paths and retain the first packet to arrive while discarding others. Nothing in *Rogers et al.* would have motivated a person of ordinary skill in the art to consider transmitting two instances of the same packet (or frame) via the pair of device drivers in *Schulter et al.*, as *Schulter et al.* does not appear to contemplate using them to transmit redundant data.

In addition, with specific regard to claims 7 and 16, Applicants respectfully disagree with the Examiner’s assertion that *Rogers et al.* discloses that the frames include sequence numbers that are used to identify duplicate frames. The Examiner cites paragraphs 0068, 0081 and 0082 as disclosing this feature, but Applicants respectfully submit that nowhere in these paragraphs is it stated that each frame carries a sequence number (e.g., in its header information), and that the sequence number is used by the receiving device or node to determine if it is a duplicate of a frame already received. Rather, *Rogers et al.* appears to make use of the fact that “[a] scheduled switch/router operates by switching packets based upon a priori knowledge of when a packet will arrive and to what output port it should be switched. Redundant paths through a network can similarly make use of this sequencing of flows” (*Rogers et al.*, ¶ 0037.) Thus, *Rogers et al.* appears to use this *a priori* knowledge, not a sequence number carried by the packet itself, to determine which packet arrived first; *Rogers et al.*’s switch or node need only look for packets on the fastest branch to see if a packet has arrived to know that it is the first packet, and if a packet has not arrived, then to look on the second-fastest branch, and so on. (See *Rogers et al.*, ¶ 0086.)

In addition, with specific regard to claims 20 and 24, Applicants respectfully disagree with the Examiner's characterization of *Rogers et al.* in relation to these claims. While the Examiner's bare statement that *Rogers et al.* discloses "the packet is decapsulated" may be true, Applicants point out that claims 20 and 24 do not merely recite that the frame is decapsulated. Rather, the claims set forth that the act of retaining one of the frame instances is accomplished in part by decapsulating the frame instances. For example, by decapsulating the frame instances, the sequence number, checksum, or other indicator of whether to retain or discard a frame can be examined. *Rogers et al.* does not state or suggest that decapsulation occurs in connection with a determination whether to retain a frame.

For at least the reasons discussed above, Applicants believe the claims would not have been obvious to a person of ordinary skill in the art in view of *Schulter et al.* and *Rogers et al.* and respectfully request reconsideration and withdrawal of this rejection.

Claims 22 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schulter et al.* in view of *Rogers et al.* as applied to claim 19, and further in view of *Trachewsky* (U.S. Patent Application Publication No. 2001/0055311). Applicants respectfully traverse this rejection.

Perhaps the most conventional use of a checksum is to determine if data has been corrupted and, if it has been corrupted, to discard it. *Trachewsky* discloses little more that is relevant to the invention as set forth in claims 22 and 26 than this well-understood principle. Applicants submit, however, that nothing in *Trachewsky* would have motivated a person of ordinary skill in the art to have considered creating two instances of a frame by encapsulating the frame with two redundant destination addresses and then, upon receiving the two instances via two separate switching planes, discarding the one that has been corrupted (by checking the validity of its checksum) and retaining the other. While encapsulation is itself also a well-known principle, nothing in the cited references discloses or suggests encapsulating a frame with both checksums for aiding a determination of whether to discard the frame and two destination addresses for creating two redundant instances of the frame. Applicants respectfully point out that it is incumbent upon the Examiner to assess the obviousness or non-obviousness of the claim as a whole, i.e., the combined effect and result of its constituent elements or steps, rather than

focus upon the question of whether each element of the invention was individually known in the prior art. See MPEP § 2141.02(I).

For at least the reasons discussed above, Applicants believe the claims would not have been obvious to a person of ordinary skill in the art in view of *Schulter et al.*, *Rogers et al.* and *Trachewsky* and respectfully request reconsideration and withdrawal of this rejection.

CONCLUSION

For the above reasons, the foregoing amendment places the Application in condition for allowance. Therefore, it is respectfully requested that the rejection of the claims be withdrawn and full allowance granted. Should the Examiner have any further comments or suggestions, please contact Bobby Slaton at (972) 477-1497.

Respectfully submitted,

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Dated: August 9, 2007

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